


DRAFT

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One of the obvious reasons aerial reconnaissance has been such a valuable tool to the Intelligence Community is the speed with which information can be collected by fast-moving camera platforms. The timeliness of obtaining tactical intelligence from aerial photography is a very important factor and all elements contributing to ultimately getting intelligence from a photographic mission must act quickly commensurate with their individual tasks. If any element or combination of elements delays the progress of a mission, the mission product or the reporting phase, then the timeliness of some or all of the significant intelligence becomes less acceptable to the tactical consumer and ultimately the decision makers. Indeed, <sup>if</sup> some information normally obtainable was available within several hours of the mission aircraft recovery, significant tactical planning or action could be <sup>frequently</sup> taken as a result. However, when the sequence of removing the film from the aircraft, packaging, transporting to a processing site, unpacking, processing, etc. requires more than a few hours, the mission becomes more strategic in nature and some vital information available to the tactical commander becomes virtually lost or at least unuseable.

Experience has shown that a strategic reconnaissance system can be made to perform a valuable tactical role in Vietnam when the film from the mission is processed in or near the theater of operations. Obviously, the ideal situation would be to have the film removed from the recovered

aircraft, processed and read out at the same immediate location.

The problem heretofore has been in quality processing on site which necessitated an unwarranted expenditure assuming each recovery base were to have its own quality processing facility. By unwarranted expenditure, I mean space, personnel, billeting and ~~such~~ support in addition to hardware costs and fresh water for conventional high quality processing, *such as produced at* 

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The following proposal has taken all of these factors into consideration and what we have planned is a transportable, self-contained capability of minimum cost, personnel, space and materiel support coupled with <sup>a</sup> rapid and high quality reliable processing <sup>capability</sup>. The plan is not to suggest that this capability eliminate in any way the functions of the Overseas Processing Centers already established since the bulk of their function of producing intelligence and duplicate materials will continue. However, we do feel that we have a system which will provide transportable, high quality tactical and strategic intelligence processing from both conventional and sophisticated film types in a fraction of the time presently employed and with a very minimum of support and almost no fresh water involved.

Presently, processing is accomplished at most installations using either ~~Kultron~~ or ~~Eastman Versimat~~ <sup>Processors</sup> ~~Printers~~ and ~~Eastman~~ Niagra Printers for making duplicates. In the process of developing ideas for solving some of the problems associated with the excessive time it takes to process film, several new and significant developments have taken place.

*in response to our specifications.*

*recent*  
First is the development of a material called Desimat. This looks like a role of white paper; however, it has some unique qualities about it which will be discussed later. The other is the development of what Eastman presently calls the Tri-Spin Machine, which is a laminator <sup>and</sup> treater designed to laminate ~~the~~ de-laminate film products in the process. Since the specifications submitted to Eastman were rather rigid, particularly when one realizes that we have asked that technical people not be required to process the film; that the film be handled to the very minimum and that both the original negative ~~plus~~ processing and duplicates be of at least equal quality to that presently prepared in the Class A field laboratories such

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as [REDACTED] The two major hurdles we feel certain have been overcome. This is the development first of the Tri-Spin which Eastman undertook with its own funds, and the almost sensational development of the Desimat material by Research Park at Eastman. Left to be developed is the design and fabrication of two additional <sup>processing-printing</sup> units which will virtually satisfy all of the specs levied on Eastman. We don't feel that there are any insurmountable problems in the development of either piece of equipment. Before going into the details of what the description of this equipment is, I would like to point out some of the significant advantages.

Using an OXCART mission as an example, we could, at Kadena, utilizing a transportable trailer operated by a total of 4 men, produce the original negative and 3 duplicates in between ~~2 1/2~~ <sup>two and</sup> one half <sup>to three</sup> hours after aircraft recovery. This time is presently less than

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*Chart this*

the amount of time required to package the film at Kadena in preparation for shipment [REDACTED] Even if the [REDACTED] could be relocated at Kadena, they would require 14 Vesamat machines and 3 Niagra printers, 2500 gallons of water, 240 kilowatts of power, 1200 square feet of floor space, as compared to equipment contained in our proposed transportable trailer, measuring 8 x 20 feet, using a total of 90 gallons of water for the mission, only 7 kilowatts of self-generated power and 4 men, versus 17 men to operate [REDACTED] equipment. The difference in cost of the two laboratories is conservatively estimated to be \$86,000 for the trailer and associated equipment versus \$238,000 for the Versamat/Niagra combination.

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In seeking a new concept to solve the processing problems, we reviewed the processing systems available today and determined that a good place from which to start would be the Bimat Transfer Processing system, since it was a step in the right direction.

Briefly, Bimat utilizes a pre-soaked transfer film imbibed with chemicals. When this film is put in contact with the exposed film, the chemicals in the transfer film process the exposed negative. Some of the silver halide from the exposed negative is transferred to the imbibed Bimat film and in addition to processing the original exposed film, you receive a positive film image on the Bimat material.

The positive Bimat material, of course, still contains moisture and being tacky, must be laminated to a clear film covering so it may be handled

conveniently. The same holds true for the original negative. This laminating is one of the main disadvantages of the whole Bimat system. Though the original negative and Bimat positive can be hardened, washed and dried in the conventional manner, very little time is saved when having to resort to this process. Also, the Bimat positive is not of sufficient quality to warrant using it as a high grade positive for interpretation.

We recognized from the above that if we could find some way to dry the original negative on an almost instantaneous basis, we could print a conventional positive, process it and dry it, using the same Bimat system. Experience has shown that this positive is as good or better than a conventionally processed positive.

Eastman Kodak worked on this problem and developed a desiccant paper material which, when put in contact with a moist film emulsion, dried the film so it could be handled and put through the printer to make the positives. The material has been labeled "Desimat" and is one of the most interesting aspects of the system development.

Having developed "Desimat", we now encouraged a machine which would complete the whole processing cycle, providing as an end product the processed dry original negative, the Bimat positive protected by a laminate and a processed dry positive film print for immediate use of the P.I. The Bimat positive transparency could be used for routine exercises such as cloud cover determination, system performance, map orientation and selection, aircraft track determination, etc. while the high quality duplicate positive film transparency could be made immediately available to the P.I.

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for intelligence reporting.

Initially, Kodak developed a three spindle machine called a "Trispin." The Trispin, with a conventional Niagra printer, can perform all of the various functions in the Diffusion Transfer Processing system from the complete processing of the exposed negative to the production of dry dupe transparencies. The one disadvantage to the Trispin is that the operator must rerun the material through the machine more than once when a dupe transparency is required. Handling of the film beyond a minimum is undesirable so the number of spindles in the machine was increased to five and is called a "Quintspin."